

## WHAT IS CLAIMED IS:

1           1.     A controller, comprising a processor for controlling a write operation  
2     and for receiving a thermal signal from a read channel, wherein the processor  
3     compares the thermal signal to a predetermined threshold to determine whether to  
4     initiate a re-write operation.

1           2.     The controller of claim 1 wherein the thermal signal is a bandpass  
2     filtered signal that is tuned to the air bearing resonant frequencies associated with a  
3     predetermined drive design.

1           3.     The controller of claim 1 wherein the processor initiates the re-write  
2     operation when the thermal signal exceeds the predetermined threshold.

1           4.     The controller of claim 3 wherein the thermal signal indicates a flying  
2     height variation for a transducer.

1           5.     The controller of claim 4 wherein the thermal signal exceeding the  
2     predetermined threshold indicates a flying height variation that will cause the higher  
3     frequency components in a signal written to media to become attenuated resulting in  
4     unrecoverable errors when reading the written signal.

1           6.     The controller of claim 3 wherein the thermal signal exceeding the  
2     predetermined threshold indicates a flying height variation that will cause the higher  
3     frequency components in a signal written to media to become attenuated resulting in  
4     unrecoverable errors when reading the written signal.

7. The controller of claim 1 wherein the thermal signal indicates a flying height variation for a transducer.

8. The controller of claim 1 wherein the processor initiates a write reassign when a thermal signal exceeding the predetermined threshold is detected during the rewrite.

9. The controller of claim 1 wherein the processor initiates a read/verify after the rewrite.

10. A disk drive, comprising:  
a processor for controlling reading and writing of data on a data recording medium;  
a write channel for processing write signals for recording on the data recording medium; and  
a read channel for reading data from the data recording medium and for providing a thermal signal representing flying height variation;  
wherein the processor compares the thermal signal to a predetermined threshold to determine whether to initiate a re-write operation.

11. The disk drive of claim 10 wherein the thermal signal is a bandpass filtered signal that is tuned to the air bearing resonant frequencies associated with a predetermined drive design.

1           12.    The disk drive of claim 10 wherein the processor initiates the re-write  
2   operation when the thermal signal exceeds the predetermined threshold.

1           13.    The disk drive of claim 12 wherein the thermal signal indicates a flying  
2   height variation for a transducer.

1           14.    The disk drive of claim 13 wherein the thermal signal exceeding the  
2   predetermined threshold indicates a flying height variation that will cause the higher  
3   frequency components in a signal written to media to become attenuated resulting in  
4   unrecoverable errors when reading the written signal.

1           15.    The disk drive of claim 12 wherein the thermal signal exceeding the  
2   predetermined threshold indicates a flying height variation that will cause the higher  
3   frequency components in a signal written to media to become attenuated resulting in  
4   unrecoverable errors when reading the written signal.

1           16.    The disk drive of claim 10 wherein the thermal signal indicates a flying  
2   height variation for a transducer.

1           17.    The disk drive of claim 10 wherein the processor initiates a write  
2   reassign when a thermal signal exceeding the predetermined threshold is detected  
3   during the rewrite.

1           18.    The disk drive of claim 10 wherein the processor initiates a read/verify  
2   after the rewrite.

1           19.    A method for predicting write failure resulting from flying height  
 2 modulation, comprising:  
 3           initiating a write operation for writing data to a recording medium;  
 4           monitoring a read channel during the write operation;  
 5           comparing a thermal signal from the read channel to a predetermined  
 6 threshold; and  
 7           re-writing the data if the thermal signal exceeds the predetermined threshold.

1           20.    The method of claim 19 further comprising bandpass filtering the  
 2 thermal signal such that the bandpass filtered signal is tuned to the air bearing  
 3 resonant frequencies associated with a predetermined drive design.

1           21.    The method of claim 19 wherein the thermal signal indicates a flying  
 2 height variation for a transducer.

1           22.    The method of claim 21 wherein the thermal signal exceeding the  
 2 predetermined threshold indicates a flying height variation that will cause the higher  
 3 frequency components in a signal written to the medium to become attenuated  
 4 resulting in unrecoverable errors when reading the written signal.

1           23.    The method of claim 19 wherein the thermal signal exceeding the  
 2 predetermined threshold indicates a flying height variation that will cause the higher  
 3 frequency components in a signal written to medium to become attenuated resulting  
 4 in unrecoverable errors when reading the written signal.

1           24.    The method of claim 19 further comprising continuing the write  
2   operation when the thermal signal does not exceed the predetermined threshold.

1           25.    The method of claim 19 further comprising initiating a write reassign  
2   when a thermal signal exceeding the predetermined threshold is detected during the  
3   rewrite.

1           26.    The method of claim 19 further comprising initiating a read/verify after  
2   the rewrite.

1           27.    An article of manufacture comprising a program storage medium  
2   readable by a computer, the medium tangibly embodying one or more programs of  
3   instructions executable by the computer to perform a method for predicting write  
4   failure resulting from flying height modulation, the method comprising:  
5        initiating a write operation for writing data to a recording medium;  
6        monitoring a read channel during the write operation;  
7        comparing a thermal signal from the read channel to a predetermined  
8   threshold; and  
9        re-writing the data if the thermal signal exceeds the predetermined threshold.

1           28.    The article of manufacture of claim 27 wherein the thermal signal is a  
2   bandpass filtered signal that is tuned to the air bearing resonant frequencies  
3   associated with a predetermined drive design.

1           29.    The article of manufacture of claim 27 wherein the thermal signal  
2 indicates a flying height variation for a transducer.

1           30.    The article of manufacture of claim 29 wherein the thermal signal  
2 exceeding the predetermined threshold indicates a flying height variation that will  
3 cause the higher frequency components in a signal written to the medium to become  
4 attenuated resulting in unrecoverable errors when reading the written signal.

1           31.    The article of manufacture of claim 27 wherein the thermal signal  
2 exceeding the predetermined threshold indicates a flying height variation that will  
3 cause the higher frequency components in a signal written to medium to become  
4 attenuated resulting in unrecoverable errors when reading the written signal.

1           32.    The article of manufacture of claim 27 further comprising continuing  
2 the write operation when the thermal signal does not exceed the predetermined  
3 threshold.

1           33.    The article of manufacture of claim 27 further comprising initiating a  
2 write reassign when a thermal signal exceeding the predetermined threshold is  
3 detected during the rewrite.

1           34.    The article of manufacture of claim 27 further comprising initiating a  
2 read/verify after the rewrite.

- 1           35.    A disk drive, comprising:
- 2           processor means for controlling reading and writing of data on a data
- 3   recording medium;
- 4           write channel means for processing write signals for recording on the data
- 5   recording medium; and
- 6           read channel means for reading data from the data recording medium and for
- 7   providing a thermal signal representing flying height variation;
- 8           wherein the processor means compares the thermal signal to a
- 9   predetermined threshold to determine whether to initiate a re-write operation.

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